



## **Montana Fish, Wildlife & Parks**

1400 South 19<sup>th</sup> Avenue  
Bozeman, MT 59718

January 28, 2014

To: Governor's Office, Tim Baker, State Capitol, Room 204, P.O. Box 200801, Helena, MT 59620-0801  
Environmental Quality Council, State Capitol, Room 106, P.O. Box 201704, Helena, MT 59620-1704  
Dept. of Environmental Quality, Metcalf Building, P.O. Box 200901, Helena, MT 59620-0901  
Dept. of Natural Resources & Conservation, P.O. Box 201601, Helena, MT 59620-1601  
Montana Fish, Wildlife & Parks:

Director's Office	Parks Division	Lands Section	FWP Commissioners
Fisheries Division	Legal Unit	Wildlife Division	Design & Construction

MT Historical Society, State Historic Preservation Office, P.O. Box 201202, Helena, MT 59620-1202  
MT State Parks Association, P.O. Box 699, Billings, MT 59103  
MT State Library, 1515 E. Sixth Ave., P.O. Box 201800, Helena, MT 59620  
James Jensen, Montana Environmental Information Center, P.O. Box 1184, Helena, MT 59624  
Janet Ellis, Montana Audubon Council, P.O. Box 595, Helena, MT 59624  
George Ochenski, P.O. Box 689, Helena, MT 59624  
Jerry DiMarco, P.O. Box 1571, Bozeman, MT 59771  
Montana Wildlife Federation, P.O. Box 1175, Helena, MT 59624  
Wayne Hurst, P.O. Box 728, Libby, MT 59923  
Jack Jones, 3014 Irene St., Butte, MT 59701  
Beaverhead Conservation District, 420 Barrett Street, Dillon, MT 59725  
U.S. Army Corp of Engineers, 10 West 15<sup>th</sup> Street, Suite 2200, Helena, MT 59626-9705  
U.S. Fish and Wildlife Service, 585 Shepard Way, Suite 1, Helena, MT 59601-6287  
U.S. Fish and Wildlife Service, 420 Barrett Street, Dillon, MT 59725  
Big Hole Watershed Committee, P.O. Box 931, Butte, MT 59703  
Montana Trout Unlimited, P.O. Box 7186, Missoula, MT 59807  
Dick Hirschy Cattle Company, Box 206, Wisdom, MT 59761  
Dan Vermillion, FWP Commissioner, PO Box 668, Livingston, MT 59047  
Anaconda Sportsmen Club, #2 Cherry, Anaconda MT 59711  
Skyline Sportsmen, Box 173, Butte, MT 59701  
Dept. of Natural Resources and Conservation, 730 N. Montana Street, Dillon, MT 59725-9424  
The Madison River Foundation, P.O. Box 1527 Ennis, Montana 59729  
Madison/Gallatin TU Mark Peterson, PO Box 52 Bozeman, MT 59771  
Joe Gutkoski, Montana River Action, 304 N 18th Avenue Bozeman, MT 59715  
Headwaters Fish & Game Association, PO Box 1941 Bozeman MT 59771-1941  
Jeff Laszlo, Granger Ranches, PO Box 691, Ennis, MT 59729  
Longhorn Ranch, PO Box 278, Ennis, MT 59729  
Charles Wellington, 140 Linden Farms Road, Locust Valley, NY 11560  
Jim Wellington, 18 Wellington Rd., Locust Valley, NY 11560  
David Smith, 56 Jeffers Road, Ennis, MT 59729  
John and Toni Scully, PO Box 986, Ennis, MT 59729  
Larry and Shirley Love, PO Box 1018, Ennis, MT 59729  
Lois and Volker Saier, PO Box 707, Ennis, MT 59712  
Mary Saunders, PO Box 73, Ennis, MT 59712  
Reints Ranch, 101 Jeffers Road, Ennis, MT 59729  
Springhill Montana, 17 Card Sound Road, Key Largo, FL 33037-3771  
L&G Living Trust, PO Box 7755, Olympia, WA 98507-7755  
The Nature Conservancy, 32 South Ewing, Helena, MT 59601-5749  
Buttermilk LLC, 168 Dan Road, Manhattan, MT 59741-8655  
Patrick and Virginia Povah, PO Box 924, West Yellowstone, MT 59758-0924

Madison Fork Ranch, 8238 S. Sicily Ct, Aurora, CO 80016-7196  
Sharon Townsend, 783 Lawrence Road, Pownal, ME 04069-6117

Ladies and Gentlemen:

The enclosed Environmental Assessment (EA) has been prepared for a proposal to restore Arctic grayling into several waters in Southwestern Montana. The currently proposed locations include: the Madison River (utilizing multiple tributaries), Wise River, Twin Lakes, Van Houten Lake and Trail Creek in the Big Hole Basin. The reintroduction method would involve using Remote Site Incubators (RSIs) to hatch Arctic grayling eggs from the conservation broodstocks directly into stream reaches, or potentially fry or fingerling stocking into lakes. No existing fish populations will be manipulated as part of the proposed project.

This EA is available for review in Helena at FWP's Headquarters, the State Library, and the Environmental Quality Council. It also may be obtained from FWP at the address provided above, or viewed on FWP's internet website: <http://www.fwp.mt.gov>.

Montana Fish, Wildlife & Parks invites you to comment on the attached proposal and attend an information public meeting. The public meeting will be held from 6 until 8 pm on February 11<sup>th</sup> in the Madison Room (basement) at the First Madison Valley Bank, 213 East Main, Ennis, Montana. Public comment will be accepted until March 7, 2014 at 5:00 pm. Comments should be sent to the following:

Montana Fish, Wildlife & Parks  
**Southwest Montana Arctic Grayling Reintroductions**  
Attn: Pat Clancey  
Box 1336  
100 Prairie Way, #6  
Ennis, MT 59729

Or e-mailed to: [pcensfwp@3rivers.net](mailto:pcensfwp@3rivers.net)

Sincerely,

A handwritten signature in black ink, appearing to read 'P. J. Flowers', enclosed within a large, loopy oval shape.

Patrick J. Flowers  
Region Three Supervisor



## **Southwest Montana Arctic Grayling Reintroductions**



## **Environmental Assessment**

**January 2014**

**Southwest Montana Arctic Grayling Reintroductions  
Draft Environmental Assessment  
MEPA/NEPA CHECKLIST**

**PART I. PROPOSED ACTION DESCRIPTION**

**1. Type of Proposed State Action:**

The proposed action would attempt to restore Arctic grayling into several waters in Southwestern Montana (Figure 1) for conservation purposes. Locations under consideration include: the Madison River (utilizing multiple tributaries), Wise River, Twin Lakes, Van Houten Lake and Trail Creek in the Big Hole Basin. The reintroduction method would involve using remote site incubators (RSIs) to hatch Arctic grayling eggs from the conservation broodstocks directly into stream reaches, or potentially fry or fingerling stocking into lakes.

**2. Agency Authority for the Proposed Action:**

Montana Fish, Wildlife & Parks (FWP) is required by law to implement programs that manage sensitive fish species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under state statute §87-5-107 or the federal Endangered Species Act.

**3. Anticipated Schedule:**

Estimated Commencement Date: May 2014  
Estimated Completion Date: December 2024

**4. Name and Location of the Project**

Southwest Montana Arctic Grayling Reintroductions

The geographic scope of this environmental assessment includes the Upper Missouri River Basin with proposed waterbodies occurring in the Madison and Big Hole river basins. The final locations of RSIs have not been identified or selected, but will be selected considering access and physical attributes (ability to supply water to RSI, protection from high flow, etc.) of the sites.

**5. Project Size—estimate the number of acres that would be directly affected that are currently:**

1. Developed/residential – 0 acres
2. Industrial – 0 acres
3. Open space/Woodlands/Recreation – 0 acres
4. Wetlands/Riparian – Madison River and tributaries: approximately (150 miles), Wise River and tributaries: (41 miles), Trail Creek and tributaries: (24 miles), Ennis Reservoir: (3,740 acres), Twin Lakes: (85 acres), Van Houten Lake: (11.5 acres).
5. Floodplain – 0 acres
6. Irrigated Cropland – 0 acres
7. Dry Cropland – 0 acres
8. Forestry – 0 acres

9. Rangeland – 0 acres

**6. Listing of any other Local, State or Federal agency that has overlapping or additional jurisdiction:**

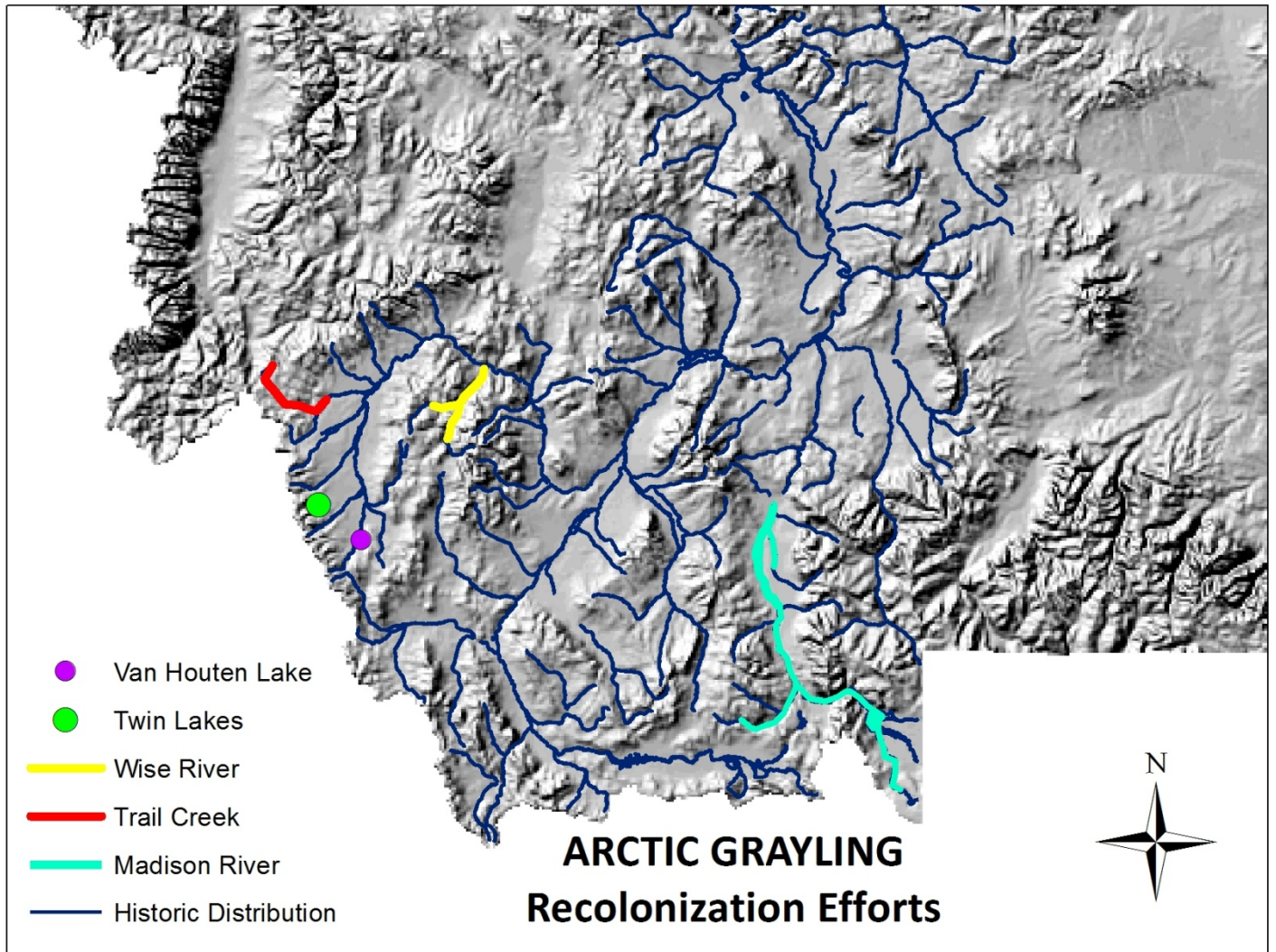
**(a) Permits:** n/a

**(b) Funding:**

Agency Name:	Montana Fish, Wildlife & Parks
Funding Amount	Work will be completed using existing FWP budgets in Wise River, Trail Creek, Van Houten Lake and Twin Lakes. Work within the Madison River drainage will be completed through existing personnel that are funded through PPL Montana. PPL Montana will provide additional operation funds to construct and maintain remote site incubators in the Madison Drainage.

**(c) Other Overlapping or Additional Jurisdictional Responsibilities:**

Agency Name:	United States Fish and Wildlife Service
Type of Responsibility:	Management authority of Arctic grayling are listed under the Endangered Species Act (ESA) as Threatened or Endangered. Currently, upper Missouri River Arctic grayling are designated a “candidate” species under the ESA.





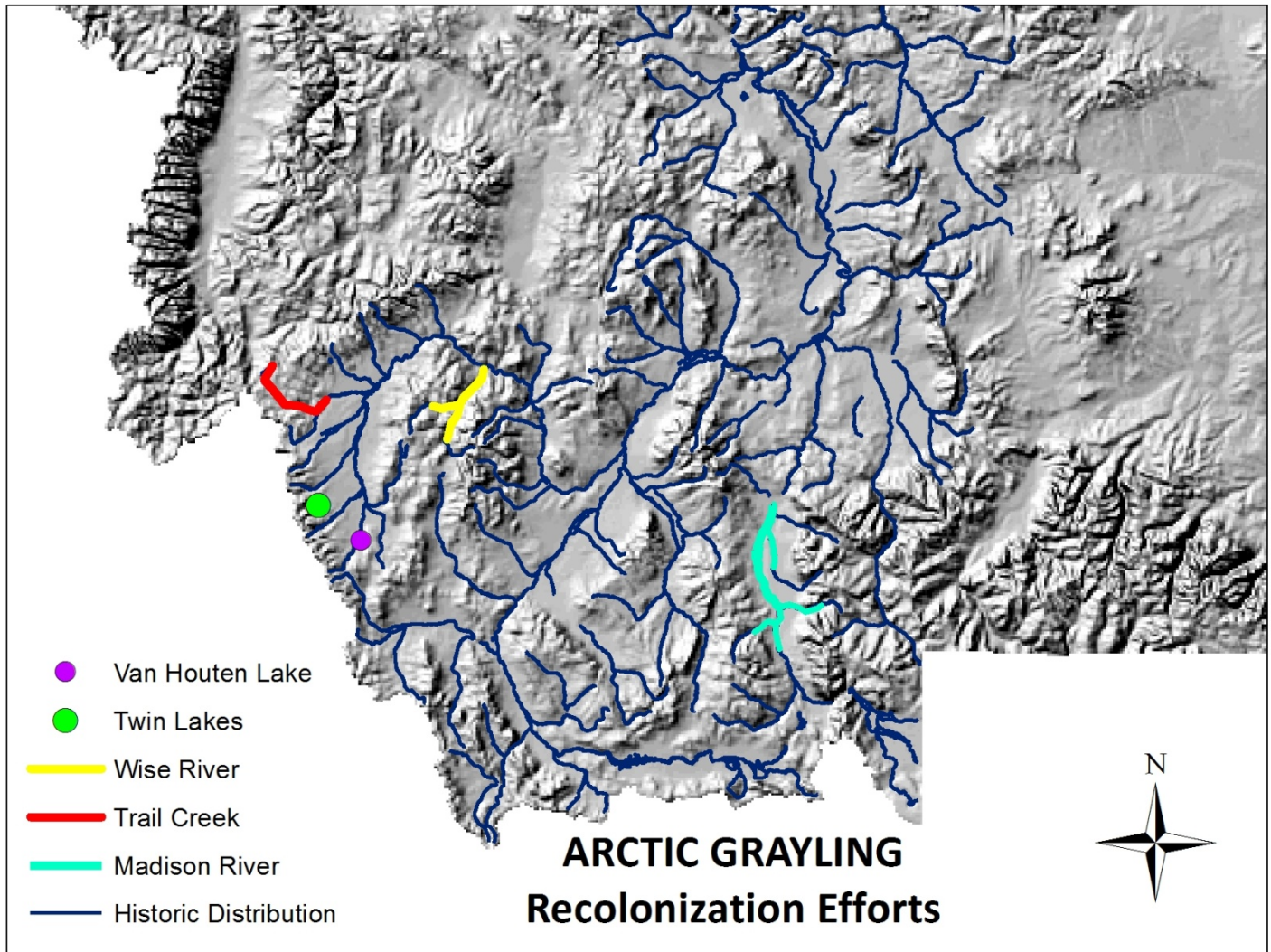


Figure 1. Map of Montana showing the historic distribution of Arctic grayling and proposed reintroduction locations.

## 7. Narrative summary of the proposed action:

Arctic grayling are native to the Missouri River basin in Southwestern and Central Montana. Currently, Arctic grayling remain in less than 15 percent of their historic range. Arctic grayling are classified as a Montana Species of Concern by FWP because of their reduced abundance and diminished distribution in recent decades. In addition, Arctic grayling have a 20+ year history of being petitioned for protection under the Endangered Species Act (ESA). Over the ESA listing history, the United States Fish and Wildlife Service (USFWS) has considered the Arctic grayling to be warranted for protection under ESA but precluded by higher priority species. A recent legal settlement between the USFWS and litigants agreed to make a final decision on a variety of species, including Arctic grayling by 2015. A preliminary decision is expected from the USFWS by October 2014, followed by a final decision by October 2015. The hypothesized reasons for the decline of Arctic grayling include: habitat degradation, overexploitation and impacts from

non-native species. A variety of impacts have caused Arctic grayling habitat to degrade including stream dewatering, channel modifications, over-grazing, riparian vegetation removal, and irrigation infrastructure modifications.

The causes of decline in Arctic grayling are thought to include habitat degradation, overexploitation and impacts from non-native species. In general, overexploitation is an issue that has been addressed through fishing regulations and enforcement presence. In some of the areas proposed for reintroduction, habitat improvements have occurred (see details below). Using deductive reasoning, some biologists have hypothesized that non-native fish (primarily trout) have caused grayling declines. Very little scientific data exist to determine if non-native trout are causing Arctic grayling declines. Further, a paucity of data exist that documents competition or predation from non-native fishes on Arctic grayling, let alone data to suggest a population level effect on Arctic grayling. In the Big Hole River, Arctic grayling and non-native trout population increases have been observed simultaneously. In some cases, such as the Madison River, the proposed reintroduction efforts may lend a better understanding of the role non-native trout play with Arctic grayling status. If Arctic grayling are able to establish a self-sustaining population in the Madison River, that result would suggest that the existing non-native trout are not causing complete extirpation of Arctic grayling. FWP will not conduct any control actions of non-native trout (brown trout, rainbow trout, or brook trout) populations as a result of this environmental assessment.

During the late 1990s and early to mid 2000s, FWP attempted reintroduction of Arctic grayling into various waters within Southwestern and Central Montana. To date, the only success realized from these initial reintroduction efforts was in the Ruby River drainage. The success of the Ruby River was due to experimentation with reintroduction methods. FWP discovered when fry, fingerling, or older aged grayling were stocked into the Ruby River and other rivers, they quickly migrated downstream and generally didn't return to the stocking location. Beginning in the early 2000s, FWP utilized remote site incubators (RSIs; Figures 2 and 3) to introduce Arctic grayling. An RSI is a 5-gallon plastic bucket with an intake and outflow pipe that allows water to continuously flow through the incubator. The flow of water provides oxygen to the eggs and removes biological waste products produced by the developing embryo. After using RSIs for a six-year period in the Ruby River drainage, reintroduction efforts were ended and the grayling were monitored for signs of success. FWP discovered that RSI hatched grayling remained near the reintroduction locations during their rearing period, and returned as adults to spawn. Natural reproduction has been documented for the past 5 years, indicating that the reintroduced grayling population in the Ruby River is well on its way to being considered as self-sustaining and viable. During the same time period, Arctic grayling reintroductions were attempted in the upper Sun River basin; however, these efforts failed, largely because of the logistical difficulties associated with maintaining RSIs and keeping eggs alive in remote wilderness locations.

The proposed action is to reintroduce Arctic grayling into two lakes and various rivers and streams in Southwestern Montana. Eyed eggs would be hatched in RSIs over a 3 to 5 year period in each waterbody. Due to logistics, introductions may not occur in each waterbody during each year. This is why FWP proposes a 10-year timeline for the environmental assessment. Each year, multiple RSIs would be used to introduce eggs into tributaries and/or mainstem sections within each active waterbody. For Twin Lake and Van Houten Lake, fry or fingerling grayling may be



stocked instead of using RSIs, as FWP expects stocked grayling will not migrate downstream in a lake environment. The reintroduction efforts would be monitored for several years afterward to determine project success. Project success is creating viable (reproduce naturally in the project waterbody for 10 years after reintroduction efforts are ended) Arctic grayling populations in the reintroduction waterbodies.

To conserve the genetic legacy of Montana Arctic grayling, FWP and partners will collect grayling gametes from existing wild grayling populations and/or from conservation broodstocks. The source of grayling gametes will be determined after consultation with conservation geneticists and discussions among partners. Gametes are typically collected in mid-May, fertilized on site and transported to the Yellowstone Trout Hatchery (near Big Timber) until they develop to the eye-up stage. At this stage the eggs are transported to the reintroduction waterbody sites and RSIs are deployed. Rate of development is dependent on stream temperatures, but typically grayling will develop from the eyed-egg stage to free swimming fry and move from the RSIs into the stream within 21 days. A fish health assessment is completed prior to transporting any eggs into the hatchery to maintain pathogen-free status. Genetic samples would be collected from all adult grayling used as broodstock, allowing future studies to determine success and identify progeny produced from the RSIs.



Figure 2. RSI set-up at a pin-and-plank diversion.



Figure 3. Two trays of RSIs.

RSI site selection is important in order to ensure hatching success. RSIs typically are set up at pin-and-plank diversions sites. If no such features are available at introduction sites, temporary impoundments (built with various materials; e.g., tarps) may be constructed to generate the head needed to run water through the RSIs. Pin-and-plank diversions are an ideal setting for RSIs and have been used at other locations to successfully operate RSIs (Figure 2 and 3). Locating RSIs on springs is also an effective method for RSI operation due to the stable flow and temperature. Other arrangements of delivering water to RSIs will be considered as needed. RSIs would be placed at a selected site for approximately one month to complete the incubation period at which point the fry would be released into river/creek and the RSI would be removed from the channel. In general, RSIs would be checked daily, and flow would be adjusted based on changing stream/river conditions.

## **Proposed Introduction Locations**

### **Madison River Drainage**

The Madison River Drainage is within the historic range of the Arctic grayling, but their historic population abundance was never quantified. Anecdotal evidence suggests Arctic grayling were common, if not abundant, at one time in the Madison River. Local lore states that ‘gunny-sack loads of natives’ were caught below Ennis Dam upon its closure in 1906. Upon further discussion, the ‘natives’ were identified as Arctic grayling. Sprungman (1935) in *Hunting and Fishing Magazine* (no longer in print), described an angling trip on the Madison River during which he and a companion caught numerous Arctic grayling, possibly in Bear Trap Canyon.

A remnant population of Arctic grayling remains in the Madison River, primarily in Ennis Reservoir. Anglers infrequently (once every few years) report catching a grayling in the Madison River up to 30 miles upstream from the reservoir. Byorth and Shepard (1990) report that

interviews of local anglers show that grayling were abundant and easily caught until 1983 when Ennis Reservoir was significantly drawn down for aquatic vegetation control. For several years after 1990 grayling were again commonly caught by anglers at the Madison River inlet areas to the reservoir, and grayling were routinely caught during FWP spring electrofishing surveys in the reservoir inlet area through 1994. Fewer angler reports and FWP sampling of adult and juvenile grayling showed that Madison grayling have become less abundant during the past 15 years. Jeanes (1996) showed that adult grayling ascend into the lower 2 miles of the Madison River upstream from Ennis Reservoir in April to spawn, the young-of-the-year grayling reside in backwaters and stream margins until approximately mid-June when they descend into the reservoir. Annual beach seining conducted in Ennis Reservoir has resulted in the capture of only six young-of-the-year Arctic grayling since 1996 (Clancey and Lohrenz 2013). The cause of the Madison grayling decline is unknown, but several hypotheses exist including: the influence of non-native trout, changes in habitat (building of Ennis Dam, a changing climate, changes in physical habitat), and population depensation (too few spawning fish to sustain the population at a viable level).

Although other locations may be identified and used, FWP has identified three Madison River tributaries as reintroduction sites (O'Dell Creek, West Fork and South Fork of the Madison River; Figure 4). Recent habitat improvement and restoration measures conducted on O'Dell Creek, which is almost exclusively on private property, have returned the stream channel to appropriate form and dimension. Significant portions of the West and South forks of the Madison are on U.S. Forest Service properties where management measures have been implemented in an effort to reverse historic impacts from grazing, mining and water withdrawal.

Yellowstone National Park (YNP) is currently conducting a project to reintroduce Arctic grayling and westslope cutthroat trout, both native species, into a section of Grayling Creek within YNP (Koel et. al. 2010; Figure 4). These introductions are anticipated to begin in 2015 or 2016 after the complete removal of non-native fish from the project area, and will provide an opportunity to compare grayling introductions in an environment free of non-native fish (Grayling Creek) against an environment where non-natives are well established (Madison sites).



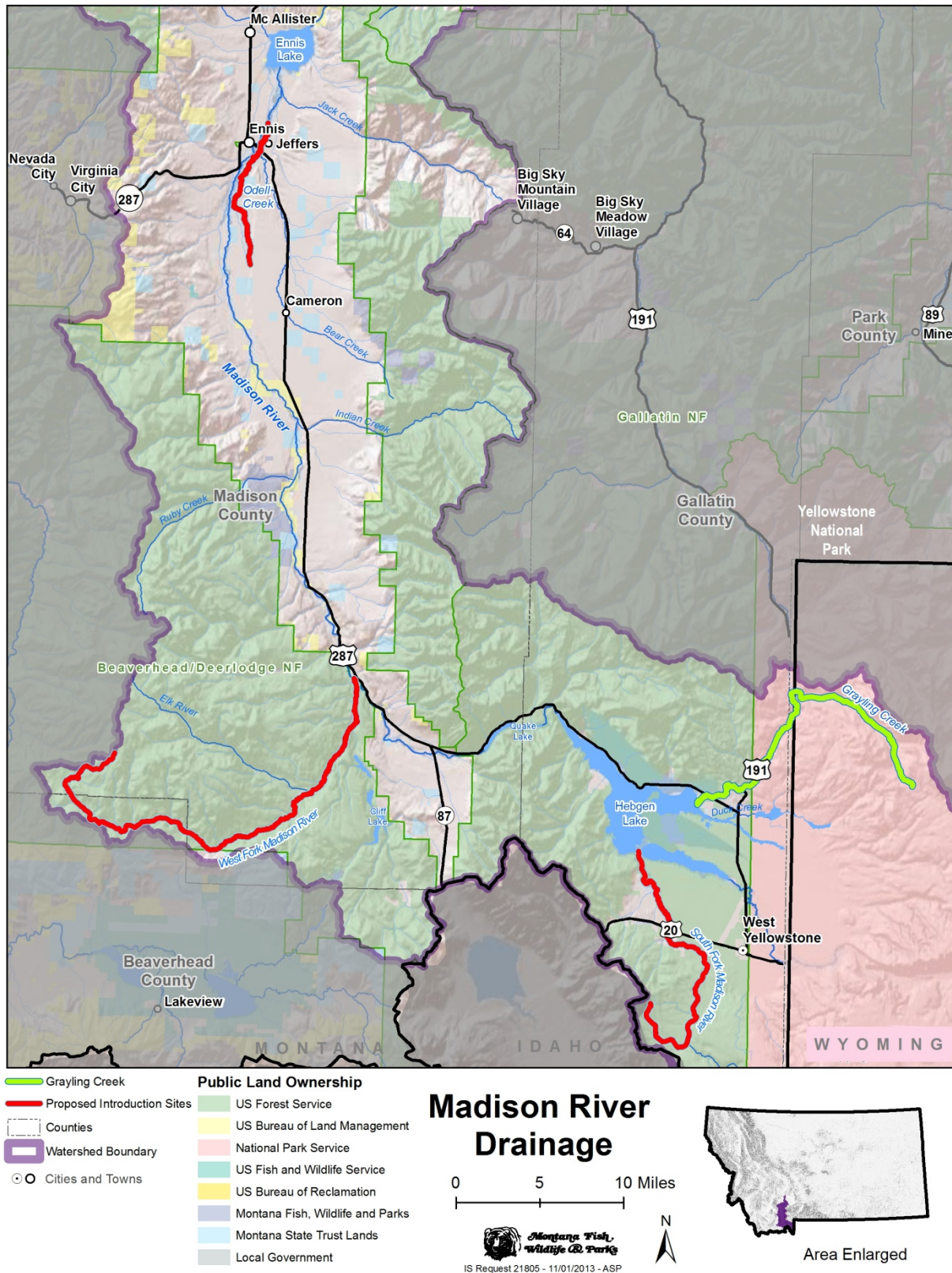


Figure 4. Map of Madison River indicating proposed reintroductions sites (in red) and showing Grayling Creek in Yellowstone National Park where grayling will be introduced in 2015.

## **Wise River**

Wise River is the largest tributary to the Big Hole River. It is formed at the confluence of Jacobsen and Mono Creeks and flows north draining the East and West Pioneer Mountains. The river is an important source of cold water to the Big Hole River. Most of the drainage is located on public land managed by the Beaverhead Deer Lodge National Forest. The lower 5 miles of river primarily flows through private property. Irrigation diversions are present on the lower 5 miles of river and lead to periodic dewatering of the stream, particularly in dry years. The river has been affected by past mining activities. The Coolidge site near the headwaters has caused impacts on the water quality and fishery of the river. There are currently Forest Service grazing allotments in the Wise River drainage and grazing has some impacts on stream habitats. A dam on Pettengill Creek burst in the 1920's and significantly altered the habitat in the lower 10 miles of the Wise River down to the confluence with the Big Hole. The aquatic habitat in the Wise River consists of long relatively homogenous riffles in the lower 5 miles of stream which were most impacted by the Pettengill flood. This reach of river is greatly lacking in pools with over 90% of the habitats consisting of riffles and glides. From 5 miles upstream to the confluence of Pettengill Creek the stream is moderate in gradient with large boulder sized stream substrate. Upstream of Pettengill Creek the river flows through a large meadow at the confluence of Lacy Creek. Upstream of Wyman Creek the river again flows through a second large meadow system. Large meadow type habitats are also present on major tributaries to Wise River including the lower 5 miles of Pettengill Creek, in Anderson Meadows in Wyman Creek and in Jacobsen Meadows at the headwaters of the drainage.

The fishery in the Wise River is composed of non-native brook, rainbow and brown trout and native, westslope cutthroat trout, mountain whitefish, longnose dace, longnose sucker, white sucker, mottled sculpin and burbot. Arctic grayling are also present in the Wise River, but at very low density. Based on past data and anecdotal evidence from anglers, Arctic grayling density in the Wise River appears to be greatest near the confluence of Wyman Creek. O'Dell Lake located at the headwaters of O'Dell Creek which drains into Wyman Creek has a self-sustaining population of Arctic grayling. Recent surveys, however, failed to find grayling in the Wise River immediately upstream or downstream of Wyman Creek. These same surveys indicated that grayling are present in lower Wise River and in O'Dell Creek. The density of non-native trout is relatively low in the Wise River relative to the high quality and diversity of habitat present particularly upstream of Pettengill Creek. The meadow reaches of the stream contain common pool habitats with many pools in excess of 3 feet deep. These pools would provide high quality adult habitat and over-wintering areas. There are also abundant fine gravels in the meadow reaches that are necessary for grayling spawning. Similar habitats are also present in the meadow reaches of the previously mentioned tributary streams. Reintroduction efforts would be monitored through electrofishing of the Wise River and tributaries to determine survival and reproduction.

## **Trail Creek**

Trail Creek and Ruby Creek converge to form the North Fork of the Big Hole River immediately upstream of the Big Hole National Battlefield, west of Wisdom Montana. Trail Creek drains from the Beaverhead Mountains and flows parallel to Highway 43 for much of its length. Over 90% of Trail Creek and its tributaries are located on U.S. Forest Service property managed by the Beaverhead-Deerlodge National Forest. The Trail Creek drainage has a history of grazing,

mining and logging practices that altered the function and health of the stream and riparian area. The grazing lease on the allotment on Trail Creek was abandoned in the early 2000's following the Mussigbrod fire, and therefore no livestock grazing has occurred in the area for more than 10 years. Mining activity, which consisted of primarily mining of stream gravels for gold, ceased in the mid 1900's. Due to more than 10 years of rest from grazing and decades rest from gold extraction, habitat conditions have reached near reference conditions. However, sediment is still an issue which resulted in Trail Creek being listed as impaired because of higher than normal fine sediment loads in the 2009 TMDL (DEQ 2009).

The North Fork of the Big Hole River and Trail Creek are within the historic range of Arctic grayling. Surveys show Arctic grayling were captured at the mouth of Trail Creek (Confluence of Ruby Creek) and downstream in the North Fork of the Big Hole River. The high quality habitat present in the stream makes it a prime candidate for grayling reintroduction. The fishery in the stream was evaluated for its suitability for grayling reintroduction in 2013. Two section of the stream were surveyed near the Forest Service Boundary and farther upstream near the confluence of Joseph Creek. Brook trout was the most abundant fish captured in both sections, but the density of fish was low relative to the high quality of habitat present (266/mile > 4 inches lower section, 557 /mile > 4 inches upper section). Further, the brook trout population was composed of primarily smaller fish (90% of fish captured were less than 11 inches). The only other non-native fish captured was a single brown trout. Burbot were the second most abundant fish captured. Longnose dace, longnose sucker, mountain whitefish and mottled sculpin were also present in the stream. With a primarily native fish community, low density of non-native brook trout, and high quality habitat, Trail Creek is a good candidate for grayling introduction. Reintroduction efforts would be monitored through electrofishing of Trail Creek and tributaries to determine the survival and recruitment.

## **Twin Lakes**

Twin Lakes is located in the Big Lake Creek drainage which drains into the Big Hole River near Jackson, Montana. The lake is 85 acres and has 2 distinct lobes separated by a short, narrow section of flowing water. The lake has a silt bottom with weed beds in shallower substrates near the eastern end of the upper lobe. The shore line on the south and through the narrows is primarily gravel with some larger substrate that is kept free of silt by wave action and the flow of the stream through the narrows. Both the inlet and outlet streams have abundant gravels and a low gradient meandering stream channel with ideal spawning habitat. The fish community in Twin Lakes consists of primarily native species such as: westslope cutthroat trout, lake trout, longnose sucker, white sucker, burbot and mottled sculpin. Brook trout is the only non-native fish species present in the lake and is the most abundant game fish. The lake is stocked annually with 1000 westslope cutthroat trout from the Washoe Park Hatchery in Anaconda. Fish growth for all species in the lake is slow due to the limited productivity of the lake and cold water temperatures. Twin Lakes is home to 1 of only 4 native populations of lake trout in Montana. This species was likely a glacial relic left from the last ice age similar to the Arctic grayling. Twin Lakes is a popular recreation area because of its pristine mountain setting. There is also a Forest Service campground and rental cabin is present at the lake.



Lakes similar in size and elevation to Twin Lakes in the Big Hole drainage all have native populations of Arctic grayling (Pintler, Mussigbrod and Miner). Despite being extensively stocked in the early 1900's, genetic evidence suggests the grayling that remain in Pintler, Mussigbrod and Miner lakes are native strain. Arctic grayling have not been sampled in Twin Lakes for decades. Similar to the other 3 lakes, grayling were extensively stocked into Twin Lakes from 1928-1951 (3,290,000 fish), but there is no evidence that grayling from these stockings successfully reproduced in any of the lakes including Twin Lakes. There appears to be adequate spawning habitat in the inlet and outlet streams for grayling reproduction (similar habitat is present in Pintler, Miner and Mussigbrod lakes) so it is possible that grayling were never naturally present in the lake. Reintroduction efforts would be monitored through netting of the lake and conducting spawning surveys in the inlet and outlet streams to determine survival and reproduction.

### **Van Houten Lake**

Van Houten Lake is located on a small, unnamed tributary to the Big Hole River southwest of Jackson, MT. The lake and surrounding area is a popular location for recreation. There is a Forest Service designated picnic area and campground at the lake and the Skinner Meadows Road provides access to the upper Big Hole and to Bloody Dick Creek. Van Houten Lake is a shallow (12-ft deep) mud bottom lake with abundant lily pads located on the western end of the lake. Such mountain lakes are typically very productive because of warmer summer water temperatures and abundant invertebrate populations. It is not clear if the lake was a natural lake or if it was created through damming of the small outlet area. The outlet area has been manipulated in the past and the lake was reportedly partially drained at one time. The lake has 2 inlet streams. The inlet stream to the west is smaller in size than the northern inlet but has significantly more length. The west tributary is approximately 1/3 mile long and originates in springs that percolate from a slumping slope. There is some spawning habitat in the stream near its headwaters and juvenile fish have been observed in the stream in this area. The northern inlet is nearly double the size of the western inlet but much shorter in length. It forks approximately 150 feet from the lake and has less than 300 total feet of stream between where it originates from the hillside and the lake. It is unknown whether there were fish in the lake prior to initial stockings in 1941 of rainbow trout. From 1941 to 1963 over 90,000 rainbow trout were stocked into the lake and no stocking has occurred since. In 1963 brook trout were also introduced into the lake. Rainbow trout were apparently not able to reproduce in the lake but brook trout were able to reproduce and have become self-sustaining. Longnose suckers and white suckers are also present in the lake, but it is unclear whether they were historically present in the lake or if they were introduced. Both sucker species are native fish to the Big Hole drainage.

In 2009 Van Houten Lake was sampled to determine the current status of the fishery. Two gillnets (1 floating and 1 sinking) were set in the lake overnight on Jun 3, 2009. Brook trout (13) white suckers (83) and longnose suckers (43) were the only fish species captured. These data indicate that the sucker population in the lake is over abundant (outnumber brook trout 10:1). When sucker populations become over abundant, they will often compete for food with sport fish such as brook trout. Several studies have documented increases in trout growth following decreases in sucker populations (Olsen and Frazer 2006). Brook trout undoubtedly prey upon the suckers in Van Houten Lake, but their predation rate is apparently not high enough to limit the number of suckers.

Future efforts may be necessary to enhance spawning habitat in the inlet streams in order for the population of fish to become self-sustaining. Stocking efforts would be monitored through netting of the lake and conducting spawning surveys in the inlet and outlet streams of the lake to determine survival and reproduction.

## **8. Alternatives:**

### **Alternative A: No Action**

If no action is taken, Arctic grayling are unlikely to naturally colonize the proposed reintroduction waterbodies. Not expanding Arctic grayling into historically occupied habitat would not increase distribution or resiliency for the species, which are primary concerns in their current management in Montana. Likewise, FWP would not satisfy its legislative mandate (MCA 87-1-201) to implement conservation actions that reduce concerns that can lead to petitions for and listing of a species under the federal Endangered Species Act. A No Action alternative to this project would not be consistent with these management requirements or FWP objectives for native species management in Montana. Finally, a highly valued sport fish would not be reestablished in waters where it would be anticipated that anglers.

No secondary impacts are expected to biological, physical, or human environment if Alternative A is implemented. The status quo would be maintained and FWP and other partner agencies would continue with existing Arctic grayling projects solely within the current distribution. No future cumulative impacts are anticipated to the physical and human environment. The No Action Alternative may influence the USFWS' decision to list grayling under the ESA. A listing by the USFWS would establish future management requirements that may affect FWP's management of the species within Montana.

### **Alternative B: Alternative Action, limit reintroductions to 1 to 3 waterbodies.**

Fewer waterbodies could be used for Arctic grayling reintroduction. Under this alternative, waterbodies not included in the reintroduction effort are unlikely to be naturally colonized by Arctic grayling. This alternative would not have the same potential as the Proposed Action to influence the current distribution and status of grayling in Montana. A reduction in the number of waterbodies used would require less staff time to accomplish, and less funding overall.

The secondary impacts to biological, physical, or human environments of this alternative are expected to be similar to the Proposed Action. At the eliminated waterbodies no secondary impacts are expected to the biological, physical, or human environment if Alternative B is implemented. The status quo would be maintained for the eliminated reintroduction waterbodies. No future cumulative impacts are anticipated to the physical and human environment. Grayling expansion into additional portions of their historic range could reduce the potential for the species to be considered for listing under the ESA. A listing by the USFWS would establish future management requirements that may affect FWP's management of the species within Montana.

### **Alternative C: Proposed Action**

The proposed action is to introduce Arctic grayling into five waterbodies (for a maximum of five years at each waterbody) in the Missouri River Drainage using RSIs in streams and rivers, and potentially using fry or fingerlings in Lakes, or a combination of techniques. Historic habitat alterations may have resulted in or contributed to the loss of Arctic grayling from the Missouri River Basin, but restoration work and changes in land management have rectified many of these issues. Further, the Proposed Action would help FWP satisfy legal requirements for management of sensitive species under state statute §87-5-107.

Secondary impacts to the biological, physical or human environment are all expected to be positive. The Arctic grayling is native to the proposed reintroduction waterbodies. Successful reintroduction of Arctic grayling in these waterbodies would help restore the biological legacy of these waters. Grayling expansion into additional portions of their historic range could reduce the potential for the species to be listed under ESA. A listing by the USFWS would establish future management requirements that may affect FWP's management of the species in Montana. Additionally, establishment of additional viable Arctic grayling populations in the Upper Missouri River Basin would likely improve the quality of public recreational/tourism opportunities by diversifying angling opportunities.

## **PART II. ENVIRONMENTAL REVIEW**

### **A. PHYSICAL ENVIRONMENT**

<b>1. <u>LAND RESOURCES</u></b>  <b>Will the proposed action result in:</b>	<b>IMPACT *</b>				<b>Can Impact Be Mitigated*</b>	<b>Comment Index</b>
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>		
a. **Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. **Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other:		X				

**The proposed project will have no impacts to land resources (soil, geological features, etc.).**

<b>2. <u>AIR</u></b>  <b>Will the proposed action result in:</b>	<b>IMPACT *</b>				<b>Can Impact Be Mitigated*</b>	<b>Comment Index</b>
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>		
a. **Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. ***For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a)		X				
f. Other:						

**The proposed project will have no effect on air quality.**

3. <b>WATER</b>  Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated*	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. *Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. ****For P-R/D-J, will the project affect a designated floodplain? (Also see 3c)		X				
m. ***For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a)		X				
n. Other:		X				

The proposed project will have no effect on existing water resources. The placement of the RSIs would be temporary and would not change water flow patterns or change water quality.

4. <b>VEGETATION</b> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated*	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. ****For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		X				
g. Other:		X				

The proposed project will have no effect on vegetation.

** 5. <b>FISH/WILDLIFE</b> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?	X					5b
c. Changes in the diversity or abundance of nongame species?		X				5c
d. Introduction of new species into an area?		X				5d
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. ****For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				5h
i. ***For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				
j. Other:		X				

5b. The intent of this proposed project is to increase the distribution of viable Arctic grayling populations. If successfully established in the project locations, this project will mitigate for historic losses of this species from the fish community; therefore, there is no need to mitigate for this positive change in diversity and abundance of game animals. The proposed project may cause shifts in



the density of existing game fish (e.g., rainbow trout, brown trout, brook trout and mountain whitefish) species through competition, but it is unlikely to be noticeable. FWP will not attempt to directly manipulate the other existing fish populations to influence the success of this project. Populations introduced into tributaries are expected to utilize both tributaries as well as mainstem reaches. In the Madison River, FWP expects grayling to inhabit the mainstem Madison River and tributaries (at least for parts of their life history) as well as Ennis Reservoir and Hebgen Reservoir. The Arctic grayling that currently exist in the Madison River and Ennis reservoir are in such low density that they have likely lost genetic diversity due to inbreeding. The proposed action may result in capture (through natural spawning) of some of the remaining genetics of the remnant population through cross breeding with introduced grayling.

5c. New Zealand Mudsnaills *Potomopyrgus antipodarum*, an invasive snail, is present in the Madison River Drainage. The introduction of Arctic grayling into waters occupied by NZMS is not expected to affect the NZMS population in any manner, nor affect its distribution. Similarly, the presence of NZMS is not expected to affect the success or failure of Arctic grayling introductions.

5d. Arctic grayling are known to be refractory to whirling disease and therefore are not carriers of the parasite.

5h. Arctic grayling have been petitioned for listing under the Endangered Species Act. Arctic grayling are currently a candidate for listing, and are being evaluated by the USFWS for listing. A preliminary decision by the USFWS whether or not to list Arctic grayling is expected by October 2014, followed by a final decision in October 2015.

## B. HUMAN ENVIRONMENT

6. <u>NOISE/ELECTRICAL EFFECTS</u>  Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Increases in existing noise levels?		X				
b. Exposure of people to serve or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:		X				

The proposed project will have no effect on the human environment.

7. <u>LAND USE</u>  Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?	X					7a
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?	X					7c
d. Adverse effects on or relocation of residences?		X				
e. Other:		X				

7a and 7c. If Arctic grayling were listed under the Endangered Species Act, Federal agencies would be required to consult with the USFWS on projects that may affect Arctic grayling. Montana Fish, Wildlife & Parks would lose regulatory authority for managing Arctic grayling in Montana waters, and would be required to obtain permits for field studies or projects that may include Arctic grayling. Private landowners, the general public, and all agencies would be prohibited from taking Arctic grayling. A listing

under the ESA is unlikely to affect fishing, and Arctic grayling would remain a catch-and-release species. Any impacts to land management that occurs due to an ESA listing may occur regardless of whether or not the proposed project is implemented. The entire proposed project area is within the historic range of Arctic grayling, and absence of Arctic grayling cannot be proven. Therefore, the USFWS may require the above listed consultation or prohibitions for the project areas even if the proposed action is not conducted.

8. <u>RISK/HEALTH HAZARDS</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. ***For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		X				
e. Other:		X				

The proposed project will not create any risk or health hazards.

9. <u>COMMUNITY IMPACT</u> Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other:		X				

The proposed project will have no community impact.

<b>10. <u>PUBLIC SERVICES/TAXES/UTILITIES</u></b>  Will the proposed action result in:	<b>IMPACT *</b>				<b>Can Impact Be Mitigated *</b>	<b>Comment Index</b>
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>		
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. **Define projected revenue sources		X				
f. **Define projected maintenance costs.		X				
g. Other:		X				

The proposed project will have no effect on public services, taxes or utilities.

<b>** 11. <u>AESTHETICS/RECREATION</u></b>  Will the proposed action result in:	<b>IMPACT *</b>				<b>Can Impact Be Mitigated *</b>	<b>Comment Index</b>
	<b>Unknown *</b>	<b>None</b>	<b>Minor *</b>	<b>Potentially Significant</b>		
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. **Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)			X			11c
d. ***For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				
e. Other:		X				

**11c. Establishment of additional viable Arctic grayling population in the Upper Missouri River Basin would likely improve the quality of public recreational/tourism opportunities by diversifying angling opportunities. Harvest regulations may be modified for reintroduced lake populations of Arctic grayling to limit harvest opportunity.**

<b>12. CULTURAL/HISTORICAL RESOURCES</b>  Will the proposed action result in:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. **Destruction or alteration of any site, structure or object of prehistoric historic or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. ****For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a)		X				
e. Other:		X				

The proposed project will have no effect on the cultural or historical resources.

#### C. SIGNIFICANCE CRITERIA

<b>13. SUMMARY EVALUATION OF SIGNIFICANCE</b>  Will the proposed action, considered as a whole:	IMPACT *				Can Impact Be Mitigated *	Comment Index
	Unknown *	None	Minor *	Potentially Significant		
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. ***For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				
g. ****For P-R/D-J, list any federal or state permits required.		X				

13e. This project is not expected to generate substantial controversy, but comment are expected to be received that will reflect the broad interests of anglers, conservation organizations, and the general public for Arctic grayling.

The proposed project may add to the positive cumulative impacts of past Arctic grayling conservation actions in the Upper Missouri River Basin. No cumulative impacts to the existing physical or human resources within the project area are anticipated.

## **PART II. ENVIRONMENTAL REVIEW, CONTINUED**

2. **Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:** If the reintroduced populations become viable, FWP would institute a long-term monitoring protocol for each viable population. Typically, monitoring of a fish population requires a few days of sampling per year, occurring from annually to once every two to five years depending on the populations.

## **PART III. NARRATIVE EVALUATION AND COMMENT**

Addressed in Part I and Part II.

## **PART IV. PUBLIC PARTICIPATION**

### **1. Public Involvement:**

Public will be notified through publication in The Montana Standard, Dillon Tribune, Bozeman Daily Chronicle, The Madisonian and through contact with the local watershed and sports groups. This EA will also be published on Montana Fish, Wildlife & Park's web page (<http://fwp.mt.gov/default.html>). Montana Fish, Wildlife and Parks will hold a public meeting in Ennis, Montana, in the Madison Room of First Madison Valley Bank, 213 East Main on February 11, 2014, from 6 til 8 pm. This level of public involvement is believed adequate for the proposed project.

### **2. Duration of comment period:**

The public comment period for this proposed action is from January 28, 2014, to March 7, 2014. Written comments can be mailed to:

**Pat Clancey  
Montana Fish, Wildlife and Parks  
Box 1336  
Ennis, MT 59729  
E-mail: [pclancey@mt.gov](mailto:pclancey@mt.gov)**

## **PART V. EA PREPARATION**

1. **Based on the significance criteria evaluated in the EA, is an EIS required? (YES/NO)?**  
No
2. **If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action.**  
FWP concludes from this review that the proposed activities will have no significant impacts based upon the criteria at ARM 12.2.431 to determine the significance of and impact. Therefore, an EIS is not warranted.

**3. Name, title, address and phone number of the person(s) responsible for preparing the EA:**

**Pat Clancey, Fisheries Biologist  
Jim Olsen, Fisheries Biologist  
Emma Cayer, Fisheries Biologist  
Travis Horton, Fisheries Manager  
Montana Fish, Wildlife and Parks  
Box 1336  
Ennis, MT 59729  
E-mail: pclancey@mt.gov**

**4. List of agencies consulted during the preparation of the EA:**

Montana Fish, Wildlife & Parks—Fisheries, Legal, and Administration and Finance divisions

United State Fish and Wildlife Service, Montana State Office



## Literature Cited

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